



Environmental Resources Management, inc.

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30 December 1988

Ms. Janet Feldstein
Regional Project Officer
Emergency and Response Division
USEPA Region II
26 Federal Plaza
New York, NY 10278

RE: Draft Health and Safety Plan for Treatability Studies
Associated with the SCP Carstadt Site.

Dear Janet:

In order to conduct the necessary sampling on site to collect samples for treatability tests, Environmental Resources Management, Inc. (ERM) has generated a Health and Safety Plan document for these activities. We have researched the health and safety provisions established by Dames and Moore for conducting RI activities on site and have utilized to the extend possible this information in the ERM Plan.

Since our sampling effort is oriented toward collecting larger quantities of contaminated materials, and involves extracting and compositing grossly contaminated on-site material, ERM has supplemented the original health and safety provisions with those which are more stringent and protective in response to the anticipated field activities.

Please find enclosed five (5) copies of the subject Health and Safety Plan. We request your timely review and approval of this document such that our sampling event can proceed next week without delay. Should you have specific questions please contact Mr. Robert Deist, ERM Health and Safety Director at (215) 524-3775.

Very truly yours,

Steven A. Croce, P.E.
Project Manager

SC/sw

Attachments

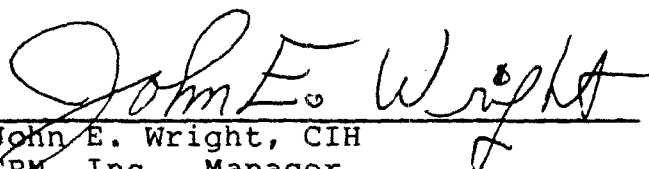
cc: Ms. Pam Lange, NJDEP (3 copies)
Mr. Gil Weil, PRP Group (1 copy)

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DRAFT

HEALTH AND SAFETY PLAN
FOR THE
FIRST OPERABLE UNIT F3
AT THE
SCIENTIFIC CHEMICAL PROCESSING (SCP) SITE
CARLSTADT, NEW JERSEY

27 December 1988


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FILE NO. 802-01

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FOREWORD

Environmental Resources Management, Inc. (ERM) has developed the following Health and Safety Plan for the SCP Carlstadt First Operable Unit FS activities. The site is located in Carlstadt, New Jersey. The intent of this plan is to recommend appropriate health and safety procedures to be followed by site personnel during field operations of this project. ERM will provide consulting assistance to the PRP Group implementing, as a minimum, protocols associated with the SCP Carlstadt Site.

Information used in the document was obtained from the Draft Remedial Investigation Report prepared by Dames and Moore, the draft Public Health Assessment of the SCP Carlstadt Site prepared by Terra, Inc., and information received by Environmental Resources Management (ERM) through the PRP Group.

Key regulations that apply to the proposed activities during the SCP Carlstadt Site FS are listed below. All field activities and operations associated with the FS will be in accordance with these regulations.

Government Regulations

Subject

29 CFR 1910.120	Hazardous Waste Site Operations
29 CFR 1910.20	Recordkeeping/Recording
29 CFR 1904	Recordkeeping/Recording
29 CFR 1910.1000	OSHA Permissible Exposure Limit
29 CFR 1926	Construction Activities
29 CFR 1910.134	Respiratory Protection

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INTRODUCTION

This Health and Safety Plan has been developed for the SCP Carlstadt PRP Group (PRP Group) and will provide recommended health and safety procedures for those employees participating in the Scientific Chemical Processing (SCP) Carlstadt Site First Operable Unit Feasibility Study (FS). In this plan, it will be referred to as the SCP Carlstadt Site.

The procedures set forth in this plan are designed to reduce the risk of exposure to chemical substances that may be present in the soil, water, and air and to other hazards associated with any of the activities at the SCP Carlstadt Site. The procedures set forth herein are developed in accordance with the provisions of 29 CFR 1910.120 (Hazardous Waste Operations and Emergency Response) and in accordance with ERM experience in similar field operations. ERM shall be responsible solely for compliance with the provisions of the present Health and Safety plan by ERM employees, subcontractors of ERM, and designated PRP Group subcontractors unless otherwise specified and agreed upon in writing by ERM. The recommended health and safety guidelines set forth within this document may be modified as further information is made available through sample analysis and on-site characterization.

Site specific information is presented in Sections 1 through 14 of this plan, with general health and safety information located in Attachments A through F.

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SECTION 1

PROJECT PERSONNEL RESPONSIBILITIES

The following responsibilities and authorities have been or will be assigned to designated personnel for the SCP Carlstadt Site FS activities.

ERM, Inc., Project Director

Ron Fender is the Project Director for the SCP Carlstadt Site First Operable Unit FS. The Project Director is responsible for oversight and coordination of the various elements of the FS. Working with Project Managers responsible for the individual elements, the Project Director provides overall review and access to ERM.

ERM, Inc., Project Manager and Designated Representative

The Project Manager is the person duly appointed by ERM to act in a supervisory capacity over all ERM employees and activities with respect to ERM's contractual obligations to the PRP Group during the SCP Carlstadt Site FS. The Project Manager is responsible for assuring that ERM Health and Safety responsibilities are carried out in conjunction with this site investigation. The ERM Project Manager will be Steven Croce.

ERM, Inc., Site Operations Manager

Persons duly appointed by ERM under supervision of ERM's Project Manager to conduct field and related activities specific to ERM's contractual agreement to the PRP Group and will act in this capacity during the FS. The ERM Site Operations Manager is

responsible for carrying out ERM Health and Safety responsibilities on the site. The Site Operations Manager will be Edward Sullivan.

Site Safety Officer

The Site Safety Officer appointed by ERM will be responsible solely for ERM employees and ERM subcontractors, unless otherwise specified in an appropriate written agreement between ERM, Inc., and the PRP Group. The Site Safety Officer may assume:

- responsibility for the field implementation, evaluation, and any necessary field modifications of this Health and Safety Plan.
- responsibility for maintaining adequate supplies of all personal protective equipment as well as calibration and maintenance of all monitoring instruments.
- authority to suspend site operations at the Site due to any ineffectiveness of or non-conformance to this Health and Safety Plan.
- Site Safety Officers may include Kyle Rosato, David Carl, or Richard Magners.

PRP Group General Project Manager

The PRP Group General Project Manager for the SCP Carlstadt Site will be H. Gilbert Weil.

Dames and Moore Contact

The consultants' site specific contact is Gerry Coscia.

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Technicians

ERM technicians will be Brian Coffey and Scott Aharonian.
Alternate technicians may be used as the project proceeds.

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SECTION 2

SITE INFORMATION

2.1 Site Background

The SCP Site is a former waste processing facility which accepted various wastes for recovery, disposal, or further disposition until operations at the site ceased in October 1980.

The SCP Site is located within the Hackensack Meadowlands. This area is characterized by a relatively flat topography with extensive salt water marshes. The land in the vicinity of the site is classified as light industrial. Of significance is the location of a large facility for both professional sports and public events (Meadowlands Sports Complex) adjacent to the site. While the site was being used by Scientific Chemical Treatment Company, Inc., and Scientific Chemical Processing, Inc., the following facilities were utilized:

- tank farm
- drum storage area
- still and boiler house
- staging platform and thin film evaporator

It was noted in the on-site Remedial Investigation (RI) completed by Dames and Moore (1988) that these structures often lacked spill containment and may have been in disrepair during their operation. Other features which may have been a result of facility operations include: two possible sludge disposal

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lagoons, miscellaneous debris, and several buildings. Following shutdown of the facility in 1980, approximately 300,000 gallons of waste and recyclable materials were removed and many of the site's facilities were dismantled. In 1986, the site was added to the National Priorities List as a Superfund Site.

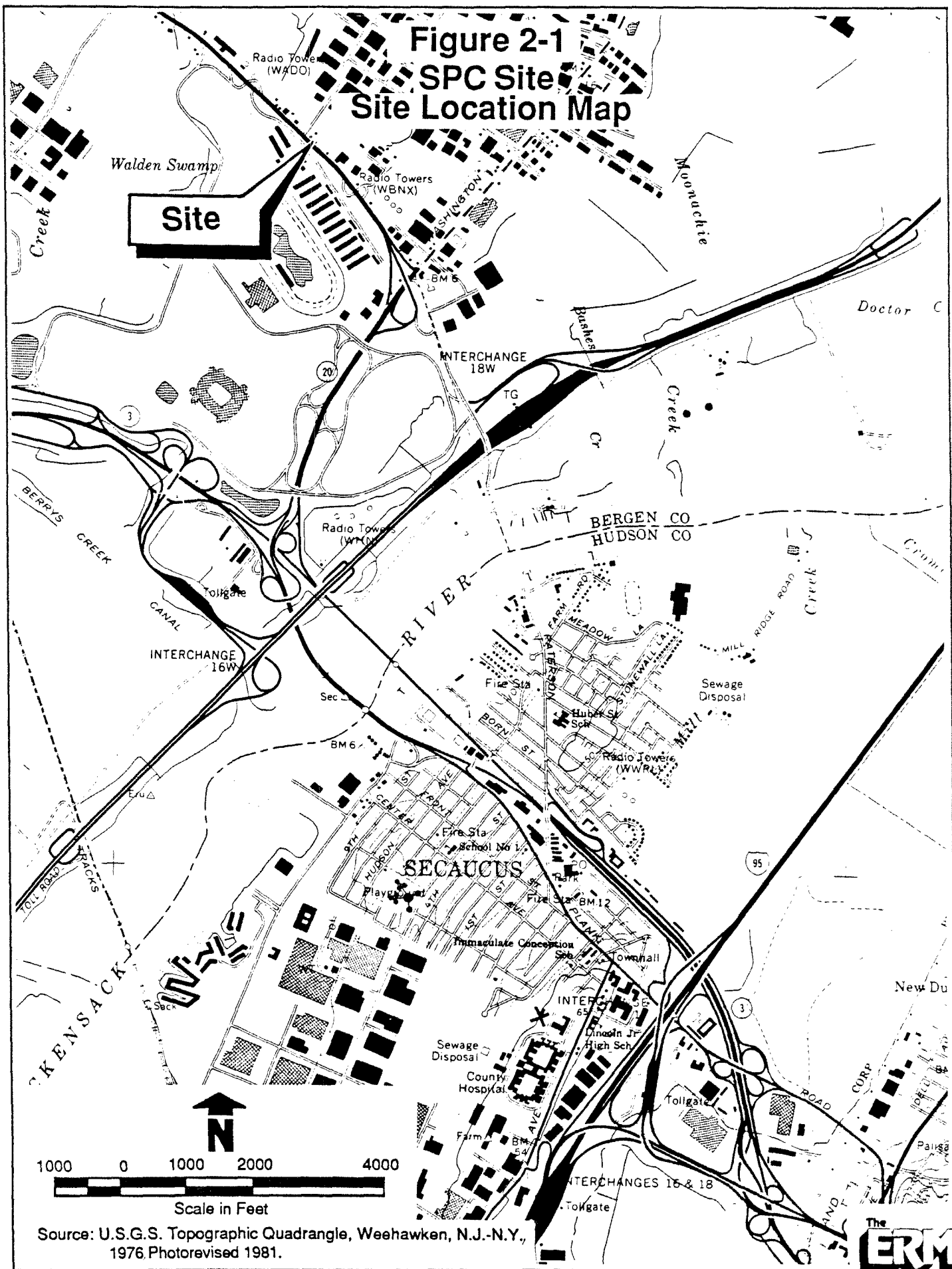
The RI completed at the SCP Site indicated that contamination of the saturated and unsaturated unconsolidated deposits, ground water, and sediment and surface water media had occurred (Dames & Moore, 1988). Elevated concentrations of both organic compounds and inorganic compounds were detected in these media.

Site Location

The Scientific Chemical Processing (SCP) Site is located in Carlstadt Township, Bergen County, New Jersey (Figure 2-1). The 5.9 acre site is located on a corner property, bounded by Paterson Plank Road on the south, Gotham Parkway on the west, Peach Island Creek on the north, and an industrial facility on the east (Figure 2-2).

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Figure 2-1 SPC Site Site Location Map

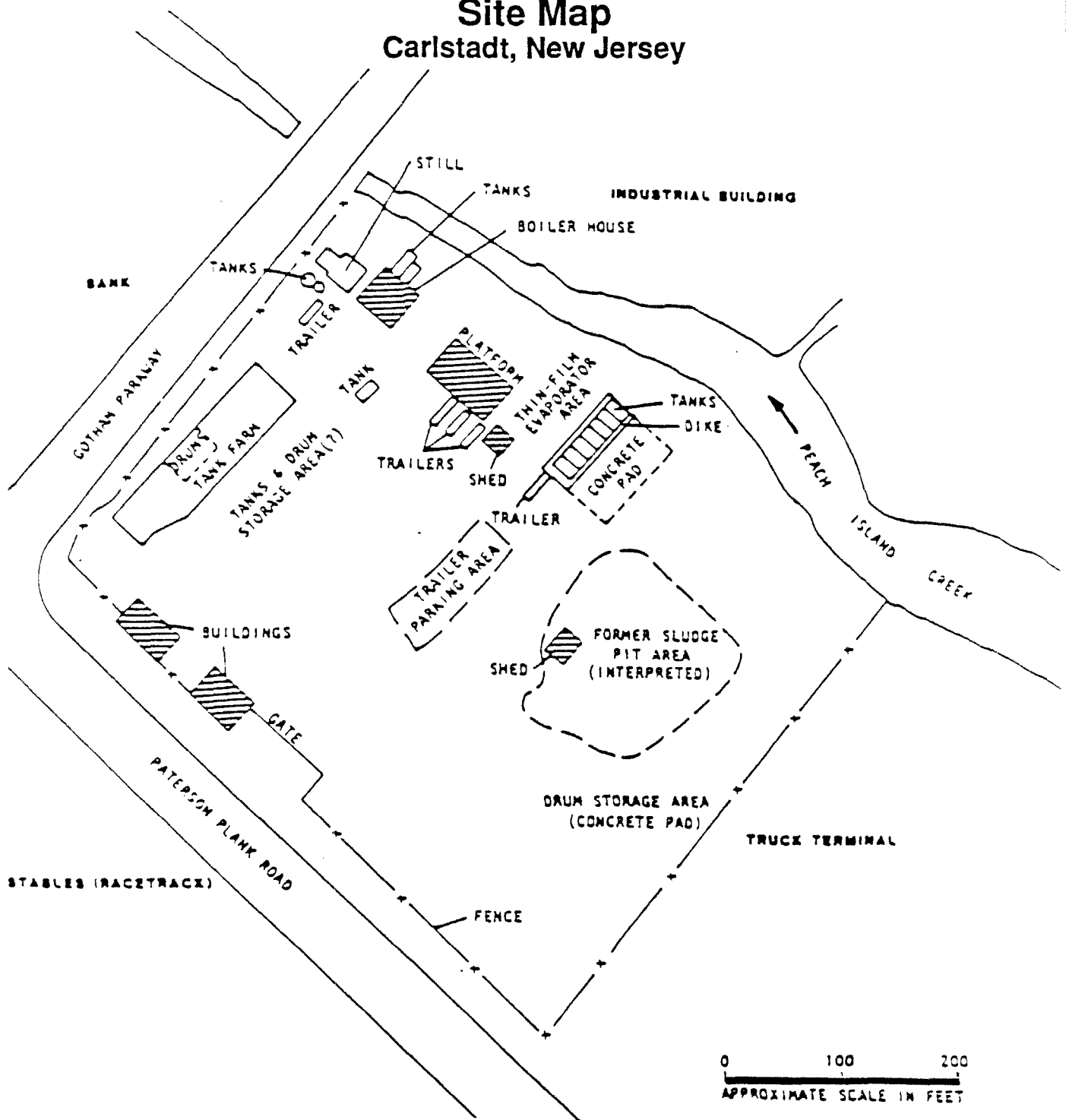


Source: U.S.G.S. Topographic Quadrangle, Weehawken, N.J.-N.Y., 1976 Photorevised 1981.

The
ERM
Group

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Figure 2-2
SPC Site
Site Map
Carlstadt, New Jersey



Notes : Base map reference: Aerial Photograph No.
 3818-6-35, March 27, 1984.

All drums, most tanks and tank trailers have
 been removed and some facilities dismantled
 since operations were ceased in 1979.

Source: Dames & Moore - SCP Remedial Investigation
 Report, September 1988..

SECTION 3

SUMMARY OF FIELD FS (TREATABILITY) TASKS SCP CARLSTADT SITE

<u>Tasks</u>	<u>Description</u>
Soil boring and sampling	Extraction of shallow soils (depths 0-5') using a hand-auger device and shovels, and collection of soil samples in 5-gallon containers.
Sludge sampling of PCB tank	* Extraction of tank contents (stratified sludge media) utilizing a portable dredge and trowels device and collection of sludge samples in 5-gallon containers.
Sludge sampling of on-site pit area	Extraction of surface sludge material (depths 0-2') from a disposal pit utilizing a hand-auger and shovels, and collection of sludge samples in 5-gallon containers.
Ground water sampling	Ground water will be sampled from two well locations. The well locations are identified as MW-3S and MW-7S. 80 gallons of ground water will be collected for various treatability testing.
* tank and contents are covered with a tarpaulin to prevent wind and rain effects on contaminated materials.	
Note: Sampling areas may be soft and murky. At the Site Safety Officer's opinion, safety harnesses or other precautions may be taken when sampling these areas.	

SECTION 4

HEALTH AND SAFETY HAZARDS

Table 4-1 lists chemical compounds which may be present during FS activities. The compounds listed have been chosen to provide a framework for the development of this Health and Safety Plan.

Table 4-2 lists potential health and safety hazards that may be encountered based on the tasks to be performed. This list has been compiled based on scheduled activities and potential site conditions.

TABLE 4-1
POTENTIAL SITE COMPOUNDS AND ASSOCIATED EXPOSURE INFORMATION

<u>Compound</u>	<u>CAS #</u>	<u>TVL/PEL</u>	<u>Characteristics</u>	<u>Route of Exposure</u>	<u>Symptoms of Overexposure*</u>	<u>Target Organs</u>
Benzene	50-32-8	1 ppm	Colorless liquid; Aromatic odor	Inhalation Absorption Ingestion Contact	Eye, skin and respiratory irritation, nausea, general weakness, abdominal pain. Has caused cancer in animals during experimental studies.	Blood, CNS, skin, bone marrow, eyes, respiratory system.
Vinyl Chloride	75-01-4	1 ppm	Colorless gas, liquefies in a freezing mixture	Inhalation	Weak, abdominal pain, GI bleeding, pale or yellow extremities. Has caused cancer in animals in experimental studies.	Liver, CNS, blood, respiratory system, lymphatic system
Phenol	108-95-2	5 ppm	Colorless to pink solid or thick liquid with a sweet tarry odor	Inhalation Absorption Ingestion	Irritation of eyes, nose, throat, skin burns, low weight, tremor, convulsions.	Liver, kidneys, skin.
Trichloroethylene	79-01-6	50 ppm	Colorless liquid, with a sweet odor	Inhalation Ingestion Contact	Headache, dizziness, blurred vision.	Respiratory system, CNS, eyes, skin, liver
Arsenic	7740-38-2	0.2 mg/m ³	Appearance and odor vary	Inhalation Absorption Contact Ingestion	Nasal ulceration, dermatitis, GI disturbances, respiratory irritation, carcinogen.	Liver, kidneys, skin, lungs, lymphatic system.
Chloroform	67-66-3	10 ppm 50 ppm ceiling	Colorless liquid with a sweet odor	Inhalation Ingestion Contact	Dizziness, mental dullness, nausea, fatigue, headache, skin irritation, suspected human carcinogen.	Liver, kidneys, heart, eyes, skin.

TABLE 4-1
(continued)

<u>Compound</u>	<u>CAS #</u>	<u>TVL/PEL</u>	<u>Characteristics</u>	<u>Route of Exposure</u>	<u>Symptoms of Overexposure*</u>	<u>Target Organs</u>
PCBs	123-91-1	0.5 ppm	Colorless to pale yellow solid compounds.	Ingestion Inhalation- (dust) Absorption Contact	Irritation, eyes, throat, headaches, nausea, fatigue, liver damage, suspected carcinogen.	Liver, skin, CNS, respiratory system cancer in humans.
1,2 dichloroethane	107-06-02	10 ppm	Clear liquid with a sweet odor like chloroform	Inhalation Ingestion	CNS, vomiting, nausea, skin and eye irritation. Has caused cancer in animals during experimental studies.	Kidneys, liver, eyes, skin, CNS.
Benzo(a)pyrene	50-32-8	0.2 mg/m ³	Solid	Inhalation- (as pesticide) Contact	Suspected human carcinogen.	Skin
Nickel	7440-02-0	0.1 mg/m ³	Appearance and odor may vary depending upon specific compound	Inhalation Ingestion	Skin inflammation, asthma. Known human carcinogen.	Nasal cavities, lungs, skin.
Carbon tetrachloride	56-23-5	5 ppm	Colorless liquid with an ether-like odor	Inhalation Absorption Ingestion Contact	Irritation: eyes, skin, throat. CNS depression, kidney damage. Known human carcinogen.	CNS, eyes, lungs, liver kidneys, skin.

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TABLE 4-2
HEALTH AND SAFETY HAZARDS

<u>Hazard</u>	<u>Description</u>	<u>Location</u>	<u>Procedure Used to Monitor/Reduce Hazard</u>
Heavy Equipment	Drill Rigs, Machinery	Throughout Site	Personnel maintain eye contact with operators; hard hats, safety shoes, and eye protection worn (as appropriate) during equipment operation.
Overhead/Underground Utilities	Electrical, Sewer, Gas, Water	To Be Determined	Locate existing utilities prior to site operations. Design installation of additional utilities so that they do not interfere with site operations.
Refuse and Materials	Construction refuse and construction materials	Throughout Site	Maintain clean work areas; dispose of refuse immediately; do not block access routes with materials.
Heat Producing/ Electrical Equipment	Generators/ Drill Rigs	Throughout Site	Operate equipment away from vegetation and other materials that may ignite. Maintain fire-fighting equipment in the vicinity of operating equipment.
Heat Stress/ Cold Exposure	Personnel working under extreme temperature are subject to adverse temperature-related effects	Throughout Site	Employ buddy system. Each worker is responsible for visually monitoring his/her partner for signs of heat stress/cold exposure. Site safety personnel will also monitor worker's conditions and establish work/rest regimens and recommend appropriate diet.
Chemical Exposure	Personnel can be exposed to various compounds associated with the site	Throughout Site	Follow guidelines in Safety Plan. Be familiar with signs and symptoms of exposure and first aid procedures. Report suspected over-exposure to supervisor immediately.
Confined Space Entry	Tank containing PCB contaminated sludge on-site to be sampled	See Figure 2-2	See Section 6 and Attachment F.

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TABLE 4-3

SCP ON-SITE CONSTITUENTS*

<u>Constituents</u>	<u>TLV</u>
Chlorobenzene	75 ppm
Methyl ethyl ketone	200 ppm
Dichloroethane	200 ppm
1,1,2,2-Tetrachloroethane	5 ppm
Silver	0.01 mg/m ³
Dimethyl phebl	0.2 mg/m ³
Mercury	0.01 mg/m ³
Copper	1 mg/m ³

* These constituents are in addition to those listed in Table 4-1.

SECTION 5

ACTION LEVELS

Action levels have been established for activity cessation, site evacuation, emergency response, and the upgrade or downgrade in the level of personal protective equipment. The following chart summarizes action levels established for the FS.

Action Levels When Benzene is Present in Breathing Space

Background level to 1 ppm	Level C with respirator available
1 ppm to 10 ppm	Level C with half- or full-face respirator
10 ppm to 50 ppm	Level C with full-face respirator
>50 ppm	Level B

Action Levels When Vinyl Chloride is Present in Breathing Space

Background level to 1 ppm	Level C with full-face air purifying respirator
>1 ppm	Level B with SCBA

Action Levels When Benzene and Vinyl Chloride are Not Present*

Background level to 5 ppm	Level C with respirator available
5 ppm to 250 ppm	Level C with full-face respirator
>250 ppm	Level B with SCBA

* These Action Levels are based on 1,2-dichloroethane and carbon tetrachloride.

Respiratory protection must be readily available at all times. Respirators will be required under dusty conditions and/or during dusty activities.

SECTION 6

ANTICIPATED PERSONAL PROTECTIVE EQUIPMENT REQUIREMENTS FOR SITE ACTIVITIES

The levels of protection assigned to each activity (below) represent the best estimate of exposure potential and protective equipment needed for that exposure. THE SITE SAFETY OFFICER WILL REVISE THOSE LEVELS OF PROTECTION BASED ON AIR MONITORING RESULTS AND ON-SITE ASSESSMENT OF ACTUAL EXPOSURES. See Attachment A for detailed description and discussion of personal protective equipment.

<u>PHYSICAL SITE ACTIVITY</u>	<u>LOCATION</u>	<u>PERSONAL PROTECTION REQUIRED</u>
Soil boring and sampling	Various areas	Level D, with Tyvek coverall, outer boots, inner and outer gloves
*Tank sampling/ vessel entry	Within the roll-off container (80 cu yd capacity)	Level C, with coated Tyvek, and full-face air purifying or air supplied respirator, taped joints (See below and Attachment F).
Sludge pit sampling	See Figure 2-2	Level C, with coated Tyvek, and full-face air purifying or air supplied respirator, taped joints, safety harness
Oversight of various activities	Various areas	PPE will be based on air monitoring results of the specific area
Ground water sampling	1 well, location to be determined	Level C, with Tyvek coverall, outer boots, inner and outer gloves, full-face air purifying or air supplied respirator

* Every effort should be made to obtain samples without entering the tank.

Under no circumstances will personnel enter the vessel without contacting the ERM Health and Safety Coordinator.

The tank will be sampled as follows:

- 1) The roll-off dumpsters will be monitored for combustible gases, oxygen levels, and organic vapor concentrations. Monitoring will be performed at the bottom, middle, and top at several locations inside the dumpster. Monitoring of the above parameters will be continuous throughout the sampling effort.
- 2) Scaffolding will be erected over the tank to provide a stable platform for sampling crew.
- 3) The integrity of the sludge tank will be checked prior to removing manway covers or other similar access coverings. Personnel will tap the outside of the tank with a non-sparking tool to determine the general condition of the tank.
- 4) A lifeline and harness will be used at all times by personnel on the scaffold. The lifeline will be attached to the upper part of the scaffolding so that personnel cannot fall into the dumpster and/or tank. Stand-by personnel will be present throughout the sampling operation.

SECTION 7

MEDICAL MONITORING

The following components must be included in the medical monitoring program required for on-site personnel, unless otherwise noted:

A. Medical History and Physical, including:

- Medical questionnaire
- Completion of medical history with occupational risk factor analysis
- Examination by physician
- Evaluation of test results
- Brief report sent to employer covering specific requested areas as well as pertinent positive findings; report sent to family physician and employee by request

B. Pulmonary Function Testing (FEV₁, FVC)

C. EKG (12-lead)

D. Lab tests, including

- Urinalysis
- Blood Chemzyme Analysis (Chem 18)
- Coronary Risk Screen
- Complete Blood Count with differential

E. Audiometric testing - supervised by board-certified staff otolaryngologist

F. Visual Acuity and Tonometry - supervised by board-certified staff ophthalmologist

Attachment B provides general information on medical monitoring. Subcontractor personnel will document their compliance with medical program requirements by completing the "Subcontractor Occupational Safety and Health Certification" form, Exhibit 8-1.

SECTION 8

PERSONNEL TRAINING

At a minimum, all applicable employees must meet the training requirements specified in 29 CFR 1910.120 by having been trained in the areas listed below. ERM contractors and subcontractors must acknowledge their compliance to the training requirements by completing the form shown in Exhibit 8-1.

1. Safety and Health Officer and Site Management Responsibilities - personnel must understand Safety Officer and Site Management responsibilities and authority.
2. Site-Specific Health and Safety Hazards - personnel must be informed of specific hazards related to site and site operations.
3. Personal Protection Equipment (PPE) - personnel must be trained in proper use of personal protective equipment.
4. Safe Work Practices/Engineering Controls - personnel must be informed of appropriate work practices and engineering controls that will reduce the risk of exposure to site hazards.
5. Safety Equipment Use - personnel must understand the use of monitoring instruments and other safety equipment.
6. Medical Surveillance Program - personnel must be informed of requirements for medical surveillance of hazardous waste site employees.

7. Site Control Methods - personnel must understand site methods used to reduce exposure to on-site and off-site personnel.
8. Decontamination Procedures - personnel must be trained in proper decontamination operations and procedures.
9. Emergency Response - personnel must be trained in proper emergency response operations and procedures.
10. Confined Space Entry/Special Hazards - personnel involved in specific hazardous activities, such as confined space entry and drum handling, must receive training in appropriate techniques to employ during such operations.

Subcontractor personnel will document their compliance with training and medical program requirements by completing the "Subcontractor Occupational Safety and Health Certification form, Exhibit 8-1.

A more detailed discussion of training requirements is included in Attachment C.

EXHIBIT 8-1

SUBCONTRACTOR OCCUPATIONAL SAFETY
AND HEALTH CERTIFICATION

PROJECT: _____

SUBCONTRACTOR: _____

1. Contractor certifies that the following personnel to be employed during the SCP Carlstadt Site First Operable Unit FS have met the following requirements of the OSHA Hazardous Waste Operations Standard (29 CFR 1910.120) and other applicable OSHA standards, as required by ERM.

<u>Subcontractor Personnel</u>	<u>Training</u>	<u>Respirator Certification</u>	<u>Medical Exam</u>
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

2. Subcontractor certifies that it has received a copy of the Site Safety and Health Plan and will ensure that its employees are informed and will comply with its requirements.
3. Subcontractor further certifies that it has read and understands and will comply with all provisions of its contractual agreement.

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SECTION 9

SITE MONITORING

Field activities associated with the SCP Carlstadt Site may create potentially hazardous conditions, such as the release of hazardous substances into the breathing space or contact with contaminated soils and water. Monitoring of airborne vapors will be continuously performed using an organic vapor analyzer (OVA) to ensure appropriate personal protective measures are employed during site activities.

Colormetric indication tubes will be used to identify any concentrations of benzene and/or vinyl chloride vapors in the worker breathing space. This will be performed periodically throughout site operations to ensure appropriate worker protection.

Explosivity will be monitored during site operations any time organic vapors exceed 500 ppm and prior to and during any vessel or other confined space entry. Measurements obtained from a Combustible Gas Indicator will be used as criteria for institution of additional precautions, site evacuation and PPE selection.

Protection from exposure to metals and non-volatiles will be accomplished through use of appropriate personal protective equipment. No monitoring will be conducted for dusts. However, precautions will be taken to keep dust levels at a minimum.

Oxygen levels will be monitored prior to and during any vessel or other confined space entry.

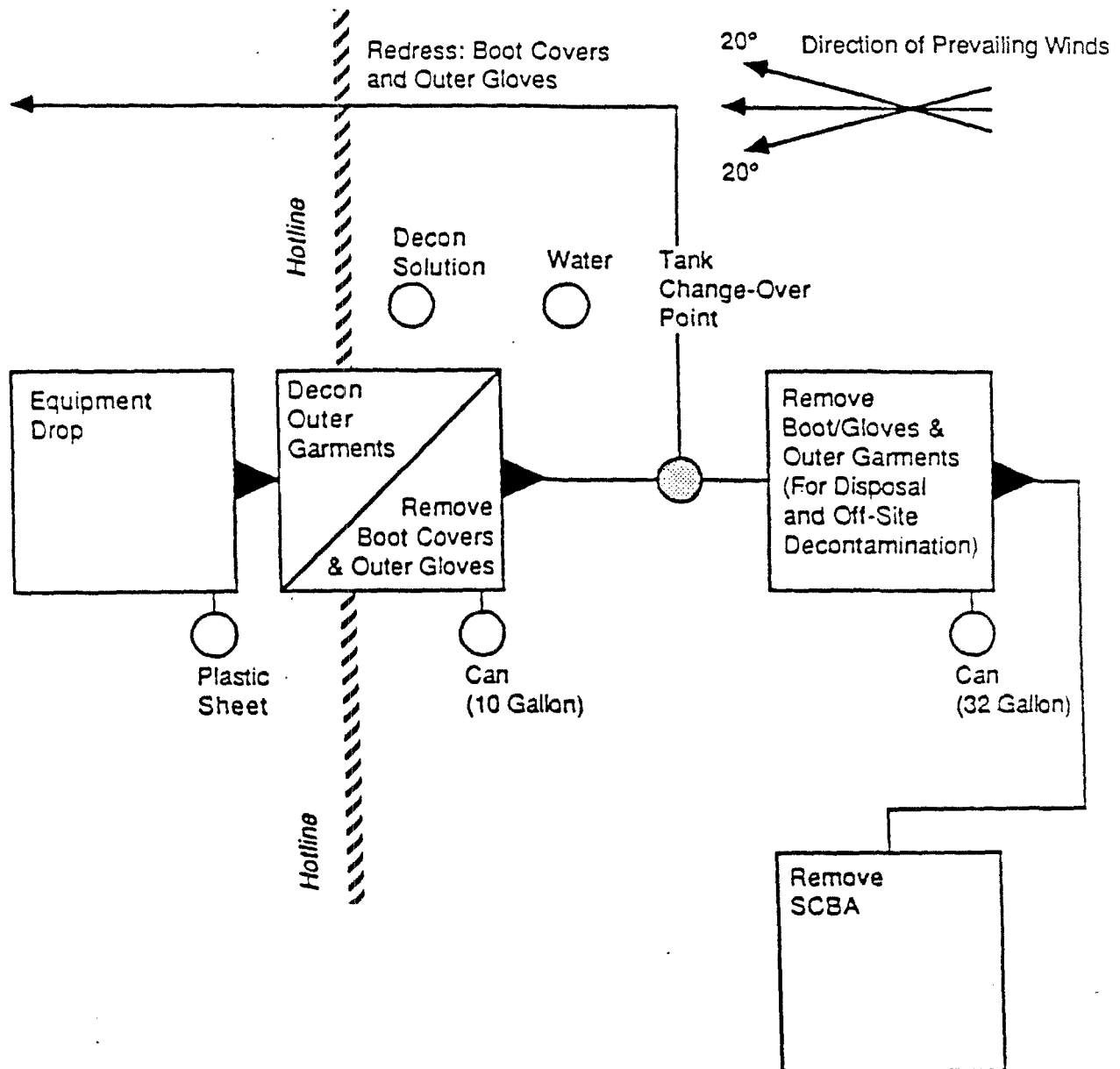
SECTION 10

DECONTAMINATION

It is expected that the highest level of protection used at the SCP Carlstadt Site will be Level B. Based on the level of expected exposure to contaminants, the minimum Level B decontamination procedures will be used, see Figure 10-1.

Refer to Attachment D for additional details regarding decontamination procedures.

Figure 10-1
Minimum Decontamination Layout
Levels A & B Protection



SECTION 11

SITE ACCESS AND SITE CONTROL

11.1 Site Access

Access inside the specific worksite location at the SCP Carlstadt Site will be limited to trained authorized personnel. Such personnel include ERM employees, designated equipment operators, and designated client and state and federal agencies' representatives. Access into the established exclusion zone or work area will be limited to those authorized personnel wearing appropriate personal protective equipment. The exclusion zones will be cordoned off with flagging tape or other suitable indicators designating the exclusion zone boundary. The zones will also be monitored by the Site Safety Officer to ensure personnel do not enter without proper personal protection.

Sign-in procedures may be implemented to ensure that authorized personnel only will participate in the investigatory activities. The Site Operations Manager will coordinate this effort and maintain the generated documentation accordingly.

11.2 Site Control

Certain procedures must be followed to ensure suitable site control and limitation of access so that those persons who may be unaware of site conditions are not exposed to inherent hazards.

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All excavations left open and unattended by site personnel will be appropriately barricaded and visibly posted with "Keep Out-Danger" signs, warning flags, or other appropriate signs. Well caps will be secured by suitable locking devices to prevent unauthorized access. All heavy machinery and equipment shall be stored in a secured area upon completion of daily activities. Lastly, all potentially contaminated media, such as cuttings and soils, will be secured in an area to prevent unauthorized tampering.

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SECTION 12

EMERGENCY RESPONSE

12.1 Notification of Site Emergencies

Medical personnel at Hackensack Medical Center and the Meadowlands Hospital will be informed of site hazards and activities prior to project initiation so that emergency situations can be handled most efficiently.

In the event of an emergency, site personnel will signal distress with three blasts from an appropriate horn (vehicle horn, air horn, etc.). All appropriate authorities will then be immediately notified of the nature and extent of the emergency.

The Carlstadt Police Department will be notified of any events that could impact the health and safety of the surrounding community. Should any fires or similar occurrences provide such a threat, the site health and safety officer will assist the police in notifying the various businesses and homes in the area.

Table 12-1 contains Emergency Response Telephone Numbers. This table will be maintained at all work sites by the Site Safety Officer, so it is always accessible in case of an emergency. Figure 12-1 contains a Site to Hospital Route Map.

12.2 Responsibilities

The Site Safety Officer will be responsible for responding to all emergencies. The Site Safety Officer will:

1. Notify appropriate individuals, authorities and/or health care facilities of the activities and hazards of the investigation.
2. Ensure that the following safety equipment is available at the site: eyewash station, first aid supplies, and fire extinguishers;
3. Have working knowledge of all safety equipment available at the site; and
4. Ensure that a map which details the most direct route to the nearest hospital is prominently posted with the emergency telephone numbers.

12.3 Accidents and Injuries

In the event of a safety or health emergency at the site, appropriate emergency measures will immediately be taken to assist those who have been injured or exposed and to protect others from hazards. The Site Safety Officer will be immediately notified and will respond according to the seriousness of the injury. Personnel trained in First-Aid will be present during site activities to provide administrative first-aid as appropriate for injuries or illnesses incurred during operations. The ERM Project Manager will be immediately informed of any serious injuries.

mobile phones will be present during site activities for emergency response and office communications. Public telephones will be located prior to the start-up of activities as back up to the mobile phones or as the primary off-site communication network.

12.5 Site to Hospital Directions

Hackensack Medical Center

Take Route 120 North to Route 17. Take Route 17 North, past a carwash and car phone company on the right to the Hackensack exit (Route 80). Take this road to Essex Street. Turn left on Essex and follow the signs into the Hospital complex.

Meadowlands Hospital

Travel 120 South to Route 3. Take Route 3 East over the bridge to the next exit. At the exit, turn left at the traffic light. The Hospital is on the right about a quarter of a mile.

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TABLE 12-1
EMERGENCY RESPONSE TELEPHONE NUMBERS

ERM Health and Safety Officer: To be determined

Hospital:

Hackensack Medical Center
201-441-2000

Meadowlands Hospital
201-348-9300

Poison Control Center:

Poison Center
212-764-7667

Police:

Carlstadt Police Department
201-438-4300

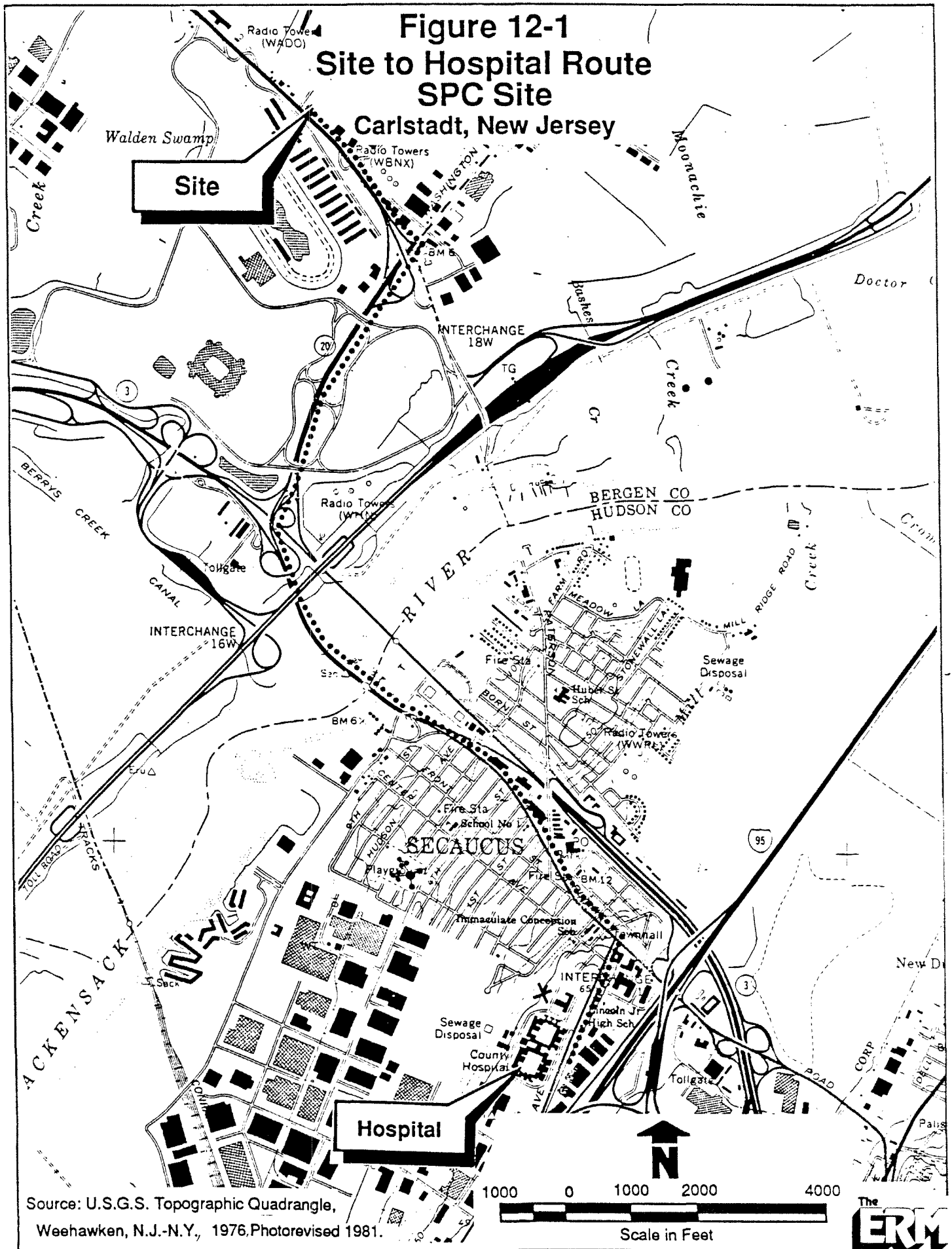
Fire Department:

Carlstadt Fire Department
201-438-4300

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Figure 12-1
Site to Hospital Route
SPC Site
Carlstadt, New Jersey



Source: U.S.G.S. Topographic Quadrangle,
 Weehawken, N.J.-N.Y., 1976. Photorevised 1981.

SECTION 13

INCIDENT REPORTING PROCEDURE

Adherence to this site-specific Health and Safety Plan and any additional facility safety rules and regulations will significantly reduce the likelihood of personnel being exposed to toxic substances above permissible exposure limits. However, in the event an incident does occur, it is imperative that specific reporting procedures be followed so that appropriate corrective action can be taken by the ERM Health and Safety (H&S) Manager and the ERM Project Manager. Upon notification of an incident, the ERM H&S Manager will contact the appropriate technical personnel for recommended medical diagnosis and, if necessary, treatment. The ERM Project Manager and the ERM H&S Manager will investigate facility/site conditions to determine: (1) whether and at what levels the incident actually occurred, (2) the cause of the incident, and (3) the means to prevent the incident from recurring.

An incident reporting form (Exhibit 13-1) has been developed so that consistent and appropriate information is obtained regarding employee exposures. The form will be completed by the ERM H&S Manager and the exposed individual. The form will be filed with the employee's medical and safety records to serve as documentation of the incident and the actions taken.

EXHIBIT 13-1

EXAMPLE - INCIDENT REPORT FORM

CLIENT NAME:
DATE:

LOCATION OF INCIDENT:

EMPLOYEE:

TYPE OF INCIDENT:

EMPLOYEE JOB TITLE:

SPECIFIC JOB AT TIME OF INCIDENT:

LEVEL OF PROTECTION WORN AT TIME OF EXPOSURE:

SUMMARY OF WHAT OCCURRED:

ACTIONS TAKEN TO CORRECT SITUATION (Engineering, P.P.E., etc.):

EMPLOYEE SIGNATURE:

SITE SAFETY OFFICER:

ERM H&S COORDINATOR:

TIME & DATE OF REPORT:

SECTION 14

SPECIAL PRECAUTIONS AND PROCEDURES

The SPC Carlstadt Site poses potential exposure risks to both chemical and physical hazards. The chemical risks have been explained in detail in the previous sections. The potential for chemical exposure to hazardous substances is significantly reduced through the use of personal protective clothing, engineering controls, and implementation of safe work practices.

Other potential hazards that are associated with the site activities include working around heavy equipment, heat stress (depending on time of year), and site debris. Precautionary measures have been established to reduce these risks to a minimum during site activities.

14.1 Heat Stress or Cold Exposure

The timing of this project may be such that heat stress or cold exposure may pose a threat to the health and safety of site personnel. Work/Rest regimens will be employed as necessary so that personnel do not suffer adverse effects from heat stress or cold exposure. Special clothing and an appropriate diet and fluid intake will be recommended to all site personnel to further reduce these temperature-related hazards. The work/rest regimens will be developed following the guidelines in the ACGIH, Threshold Limit Values and Biological Exposure Indices for 1987-1988.

14.2 Heavy Machinery/Equipment

All site employees must remain aware of those site activities that involve the use of heavy equipment and machinery. Respiratory protection and protective eyewear may be worn frequently during site activities. This protective equipment significantly reduces peripheral vision of the wearer. Therefore, it is essential that all employees at the site exercise extreme caution during operation of equipment and machinery to avoid physical injury to themselves or others.

14.3 Construction Materials and Site Refuse

All construction materials and site refuse should be contained in appropriate areas or facilities. Site personnel should make certain that fencing, cement, etc. are not scattered throughout the area of activity and that all trash and scrap materials are immediately and properly disposed of.

14.5 Additional Safety Practices

The following are important safety precautions which will be enforced during this investigation:

1. Eating, drinking, chewing gum or tobacco, smoking, or any practice that increases the probability of hand-to-mouth transfer and ingestion of material is prohibited in any area designated as contaminated.
2. Hands and face must be thoroughly washed upon leaving the work area and before eating, drinking, or any other activity.

3. Whenever decontamination procedures for outer garments are in effect, the entire body should be thoroughly washed as soon as possible after the protective garment is removed.
4. No excessive facial hair which interferes with the effectiveness of a respirator will be permitted on personnel required to wear respiratory protection equipment. The respirator must seal against the face so that the wearer receives air only through the air purifying cartridges attached to the respirator. Fit testing shall be performed prior to respirator use to ensure a proper seal is obtained by the wearer.
5. Contact with potentially contaminated surfaces should be avoided whenever possible. One should not walk through puddles, mud, or other discolored surfaces; kneel on ground; lean, sit or place equipment on drums, containers, vehicles, or the ground.
6. Medicine and alcohol can potentiate the effect from exposure to certain compounds. Prescribed drugs and alcoholic beverages should not be consumed by personnel involved in the project.
7. Personnel and equipment in the work areas should be minimized, consistent with effective site operations.
8. Work areas for various operational activities should be established.
9. Procedures for leaving the work area must be planned and implemented prior to going to the site. Work areas and

decontamination procedures must be established on the basis of prevailing site conditions.

10. Respirators will be issued for the exclusive use of one worker and will be cleaned and disinfected after each use by the worker.
11. Safety gloves and boots shall be taped to the disposable, chemical-protective suits as necessary.
12. All unsafe equipment left unattended will be identified by a "DANGER, DO NOT OPERATE" tag.
13. Noise mufflers or ear plugs may be required for all site personnel working around heavy equipment. This requirement will be at the discretion of the Site Safety Officer. Disposable, form-fitting plugs are preferred.
14. Cartridges for air-purifying respirators in use will be changed daily at a minimum.
15. Self-contained breathing apparatus (SCBA) and air-purifying respirators will be inspected daily by the Site Safety Officer.
16. All activities in the exclusion zone will be conducted using the "Buddy System". The Buddy is another worker fully dressed in the appropriate PPE, who can perform the following activities:
 - Provide his/her partner with assistance;
 - Observe his/her partner for signs of chemical or heat exposure;

- Periodically check the integrity of his/her partner's PPE; and
- Notify others if emergency help is needed.

ATTACHMENT A

PERSONAL PROTECTIVE EQUIPMENT

A.1 Protective Equipment

All personnel must be provided with appropriate personal safety equipment and protective clothing. Each individual will be properly trained in the use of this safety equipment before the start of field activities. Safety equipment and protective clothing shall be used as directed by the Site Safety Officer. All such equipment and clothing will be cleaned and maintained in proper condition by project personnel. The Site Safety Officer will monitor the maintenance of personnel protective equipment to ensure proper procedures are followed.

Personal protective equipment will be worn at all times, as designated by the Health and Safety Plan. Levels of protective clothing and equipment have been assigned to specific work tasks.

The personal protective equipment levels designated below are in conformance with EPA criteria for Level B, C, and D. protection. All respiratory protective equipment used will be approved by NIOSH/MSHA.

A.2 Level B. Protection

- A. Pressure demand cascade air-line system or other suitable self-contained, pressure demand breathing apparatus.
- B. Chemical-resistant clothing such as Poly-coated Tyvek® or Saranex®. Suits will be one piece with booties and elastic wrist bands.
- C. Outer nitrile and inner latex surgical gloves.
- D. Leather boots with rubber overboots.
- E. Water-resistant tape over protective clothing as necessary.
- F. Options as required:
 - 1. Coveralls
 - 2. Disposable outer boots
 - 3. Face shield
 - 4. Escape mask
 - 5. Hard hat
 - 6. Hearing protection

A.3 Level C Protection

- A. Full-face or half-face air purifying respirator equipped with appropriate organic vapor/dust canisters or cartridges.
- B. Chemical-resistant clothing such as Tyvek®, Poly-coated Tyvek® or Saranex®'. Suits will be one piece with hoods, booties and elastic wrist bands.
- C. Outer nitrile gloves and inner latex surgical gloves.
- D. Leather boots with rubber overboots.
- E. Options as required:
 - 1. Coveralls
 - 2. Disposable outer boots
 - 3. Escape mask
 - 4. Hard hat
 - 5. Face shield
 - 6. Hearing protection
 - 7. Safety glasses
 - 8. Water-resistant tape

A.4 Level D. Protection

- A. Coveralls or long sleeve shirts and long pants.
- B. Outer nitrile gloves at a minimum for all material handling activities. Inner latex surgical gloves are recommended where practical.
- C. Leather boots with rubber overboots.
- D. Level C protection readily available.
- E. Options as required:
 - 1. Disposable outer boots
 - 2. Hard hat
 - 3. Safety glasses
 - 4. Hearing protection
 - 5. Chemical-resistant gloves

ATTACHMENT B
MEDICAL MONITORING

The Occupational Safety and Health Administration (OSHA) has established requirements for a medical surveillance program designed to monitor and reduce health risks for employees potentially exposed to hazardous materials (29 CFR 1910.120). This program has been designed to provide baseline medical data for each employee involved in hazardous waste operations including field activities, and to determine his/her ability to wear personal protective equipment, such as chemical resistant clothing and respirators. Employees who wear or may wear respiratory protection must be provided respirators as regulated by 29 CFR 1910.134. This Standard requires that an individual's ability to wear respiratory protection be medically certified before he/she performs designated duties. Where medical requirements of 29 CFR 1910.120 overlap those of 29 CFR 1910.134, the most stringent of the two will be enforced.

The medical examinations must be administered on a pre-employment and annual basis and as warranted by symptoms of exposure or specialized activities. These examinations shall be provided by employers without cost or loss of pay to the employee. For the purposes of this Health and Safety Plan, all subcontractors shall assume the employer's responsibility in obtaining the necessary medical monitoring and training for their employees pursuant to this section of 29 CFR 1910.120.

Exhibit B-1 provides a list of minimum medical monitoring requirements. The examining physician is required to make a report to the employer of any medical condition which would place such employees at increased risk of wearing a respirator or other personal protective equipment. Each employer engaged in site work shall assume the responsibility of maintaining site personnel medical records as regulated by 29 CFR 1910.120 where applicable. Exemption from the medical surveillance program may be allowed by the ERM Manager of Safety and Health or his designee. These exemptions will be based on his interpretation of the requirements of 1910.120 relative to each individual exemption request.

All employees contracted to work at the site designated by this Plan will be responsible to insure their employees have received the proper medical tests as regulated by 29 CFR 1910.120 and shall provide the contractor with certification of same.

EXHIBIT B-1

MEDICAL MONITORING REQUIREMENTS

The following components must be included in the medical monitoring program required for on-site personnel, unless otherwise noted:

- A. Medical History and Physical, including:
 - Medical questionnaire
 - Completion of medical history with occupational risk factor analysis
 - Examination by physician
 - Evaluation of test results
 - Brief report sent to employer covering specific requested areas as well as pertinent positive findings; report sent to family physician and employee by request
- B. Pulmonary Function Testing (FEV₁, FVC)
- C. EKG (12-lead)
- D. Lab tests, including:
 - Urinalysis
 - Blood Chemzyme Analysis (Chem 18)
 - Coronary Risk Screen
 - Complete Blood Count with differential
- E. Audiometric testing - supervised by board-certified staff otolaryngologist
- F. Visual Acuity and Tonometry - supervised by board-certified staff ophthalmologist

ATTACHMENT C

PERSONNEL TRAINING

Site personnel associated with those field activities in which the potential for exposure to hazardous substances above the PEL exists will be required to participate in a health and safety training program that complies with criteria set forth by ERM and OSHA as per interim final regulation 29 CFR 1910.120. This program will instruct employees on general health and safety principles and procedures, proper operation of monitoring instruments, and use of personal protective equipment.

In addition, site employees will undergo site-specific training prior to the start-up of any given project or task. As activities change at a particular site, related training will address potential hazards and associated risks, site operating procedures, emergency response and site control methods to be employed.

Specialized training will be provided as dictated by the nature of site activities. Specialized training will be provided for activities such as confined space entry, excavations and handling of unidentified substances. Employees involved in these types of activities will be given off-site instruction regarding the potential hazards involved with safety activities and the appropriate health and safety procedures to be followed. Off-site instruction is meant to include any area where employees will not be exposed to site hazards.

Site personnel involved in the field activities will have received the appropriate basic training plus additional specific training where needed. This Health and Safety Plan must be distributed to all subcontractors prior to the start of field activities. A pre-operation meeting will be held to discuss the contents of the Plan. Specialty training will be provided as determined by task and responsibility. All training of personnel will be conducted under direct supervision of a trained Health and Safety Officer.

Exemptions from training may be approved by the ERM Manager of Health and Safety or his designee.

ATTACHMENT D
DECONTAMINATION

D.1 General

Personnel involved with hazardous material handling may be exposed to compounds in a number of ways, despite the most stringent protective procedures. Personnel may come in contact with vapors, gases, mists, or particulates in the air, or may come in contact with site media while performing work tasks. Use of monitoring instruments and equipment can also result in exposure to hazardous substances.

In general, decontamination involves scrubbing with a non-phosphate soap/water solution followed by clean water rinses. All disposable items will be disposed of in a dry container. Certain parts of contaminated respirators, such as harness assemblies and leather or cloth components, are different to decontaminate. If grossly contaminated, they may have to be discarded. Rubber components can be soaked in soap and water and scrubbed with a brush. In addition to being decontaminated, all respirators, non-disposable protective clothing, and other personal articles must be sanitized before they can be used again unless they are assigned to individuals. The manufacturer's instructions should be followed in sanitizing the respirator masks. The Site Safety Officer will be responsible for supervising the proper protective equipment.

D.2 Standard PPE Decontamination

The Site Safety Officer will monitor decontamination procedures to ensure their effectiveness. Modifications of the decontamination procedure may be necessary as determined by the Site Safety Officer's observations.

Level B - Personal Protection Decontamination Procedure

Step 1 -- Segregated Equipment Drop

Deposit equipment (tools, sampling devices, notes, monitoring instruments, radios, etc) used on the site onto plastic drop cloths.

Step 2 -- Boot Covers and Glove Wash

Outer Boot covers and outer gloves should be scrubbed with a decontamination solution of detergent and water.

Step 3 -- Rinse Off Boot Covers and Gloves

Decontamination solution should be rinsed off boot covers and gloves using generous amounts of water. Repeat as many times as necessary.

Step 4 -- Tape Removal

Remove tape from around boots and gloves and place into container with plastic liner.

Step 5 -- Boot Cover Removal

Remove disposable boot covers and place into container with plastic liner.

Step 6 -- Outer Glove Removal

Remove outer gloves and deposit in container with plastic liner.

Step 7 -- Suit/Safety Boot Wash

Completely wash splash suit, SCBA, gloves, and safety boots. Care should be exercised that no water is allowed into the SCBA regulator. It is suggested that SCBA regulator be wrapped in plastic.

Step 8 -- Suit/Safety Boot Rinse

Thoroughly rinse off all decontamination solution from protective clothing.

Step 9 -- Tank Changes

This is the last step in the decontamination procedure for those workers wishing to change air tanks and return to the exclusion zone. The worker's air tank is exchanged, new outer glove and boot covers are donned, and joints taped.

Step 10 -- Removal of Safety Boots

Remove safety boots and deposit in container with a plastic liner.

Step 11 -- SCBA Backpack Removal

Without removing face piece, remove the SCBA backpack and place it on a table. Then disconnect the face piece from the remaining SCBA unit and proceed to the next station.

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Step 12 -- Splash Suit Removal

With care, remove splash suit. The exterior of the splash suit should not come in contact with any inner layers of clothing.

Step 13 -- Inner Glove Wash

The inner gloves should be washed with a mild decontamination solution (detergent/water).

Step 14 -- Inner Glove Rinse

Generously rinse inner gloves with water.

Step 15 -- Face Piece Removal

Without touching face with gloves, remove face piece. Deposit face piece into a container which has a plastic liner.

Step 16 -- Inner Glove Removal

Remove inner glove and deposit in container with plastic liner.

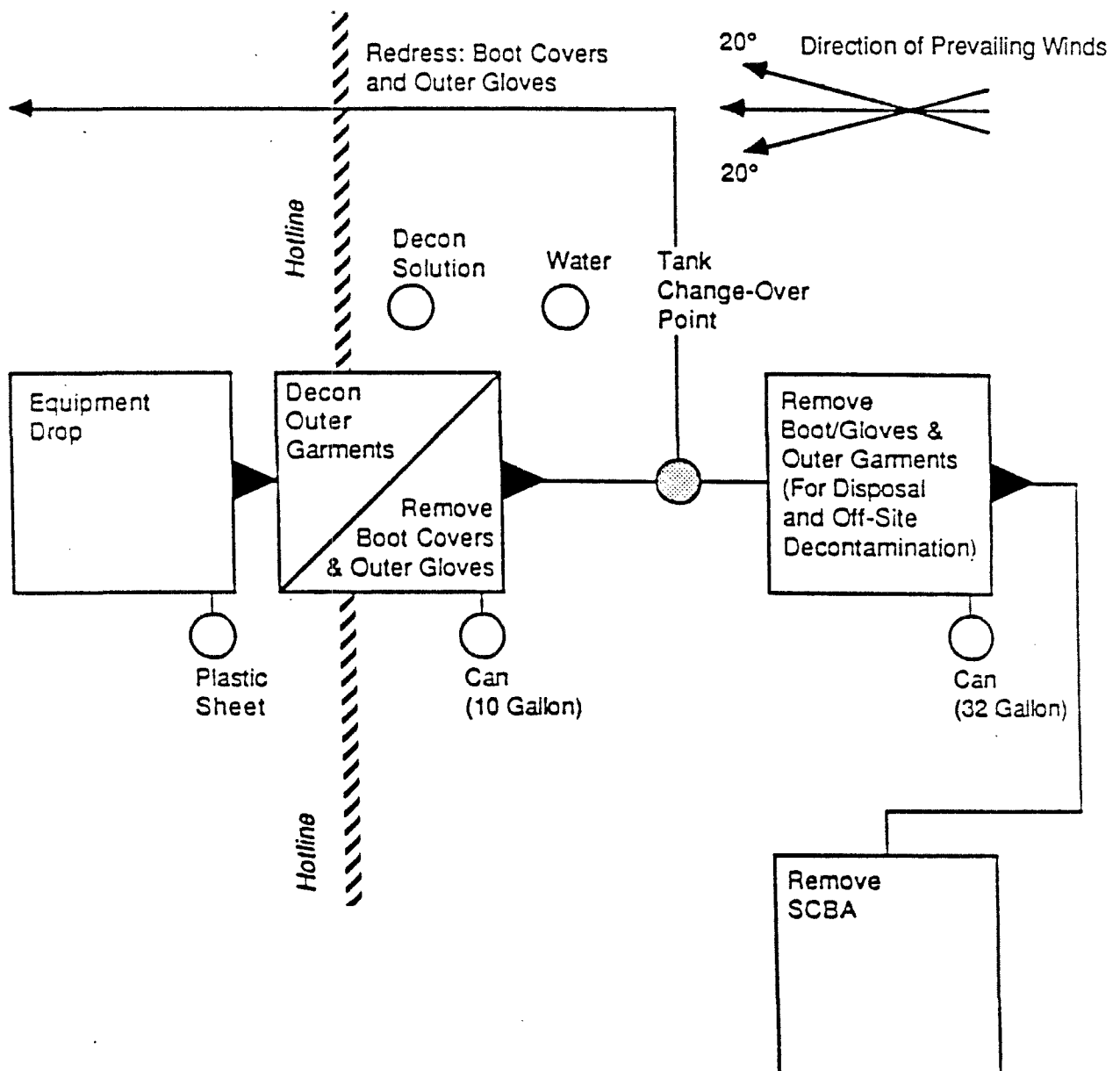
Step 17 -- Field Wash

Wash hands and face thoroughly. If highly toxic, skin corrosive, or skin-absorbent materials are known or suspected to be present, take a shower.

Level C and Level D Personal Protective Decontamination

The decontamination procedure for Level C and Level D personal protection will employ applicable steps detailed in the Level B decontamination process.

Figure D-1
Minimum Decontamination Layout
Levels A & B Protection



ATTACHMENT E

SPECIAL HAZARDS/CONSIDERATIONS

EXCAVATION, TRENCHING SHORING

The main concerns of trenching and excavation are ground control and fall prevention. Before an excavation is made, a thorough effort should be made to determine whether underground obstructions (such as sewer, telephone, fuel, water, or electrical lines) or above ground hazards may be encountered. Utility lines should be properly supported during excavation. The appropriate utility personnel should be contacted to inform them of the proposed site excavation work and to receive any additional advice based on their experience. Natural hazards as boulders and trees should be removed or controlled before excavation begins if they might create a hazard to workers.

Very specific guidelines exist to protect employees from moving ground during excavation. They are based on ground type and excavation depth. The walls and faces of all excavations to which employees are exposed should be guarded by a shoring system, a sloping of the ground, or another equivalent means. All slopes should be excavated to a degree which accommodates the ground's unique ability to slide. Soil types listed below from most likely to least likely to slide:

- well-rounded loose sand,
- compacted sharp sand,
- average soils,
- compact angular gravel, and
- solid rock, shale, or cemented sand and gravels.

Not all excavations need to be shored or sloped. The purpose of these precautions is to prevent crushing injury or suffocation. **Banks more than five feet high should be shored with materials in good condition or laid back to a stable slope based on ground type.** Trenches less than five feet deep should also be protected if it appears that an injury may be caused by hazardous ground movement. Walkways, sidewalks and runways should be free of excavated materials to prevent falls; planks used for raised walkways should be securely fastened at each end.

It is necessary to consider unexpected events or past ground work which might affect the security of the excavation site.

Additional precautions should be taken to prevent slides or cave-ins when trenches or excavations are made near backfilled excavations or where excavations are subject to external vibrations such as railway or highway traffic or machinery. Rain storms may seriously compromise the

stability of excavation surfaces; a competent person should ensure that no weather-related decrease in safety has occurred.

Diversion ditches, dikes, or other suitable means should be used to prevent surface water from entering an excavation and to provide adequate drainage of the area adjacent to the excavation. Water should not be allowed to accumulate in an excavation. If it is necessary to place or operate power shovels, derricks, trucks, materials, or other heavy objects on a level above and near an excavation, the side of the excavation should be braced as necessary to resist the extra pressure from such loads. When mobile equipment is used next to excavations, substantial stop logs or barricades shall be installed. If possible, the grade should be away from the excavation.

Minimum trenching requirements are shown as charts in Figures E-1 and E-2.

Figure E-1 Minimum Trenching Requirements

Approximate Angle of Repose
for sloping of sides of excavations

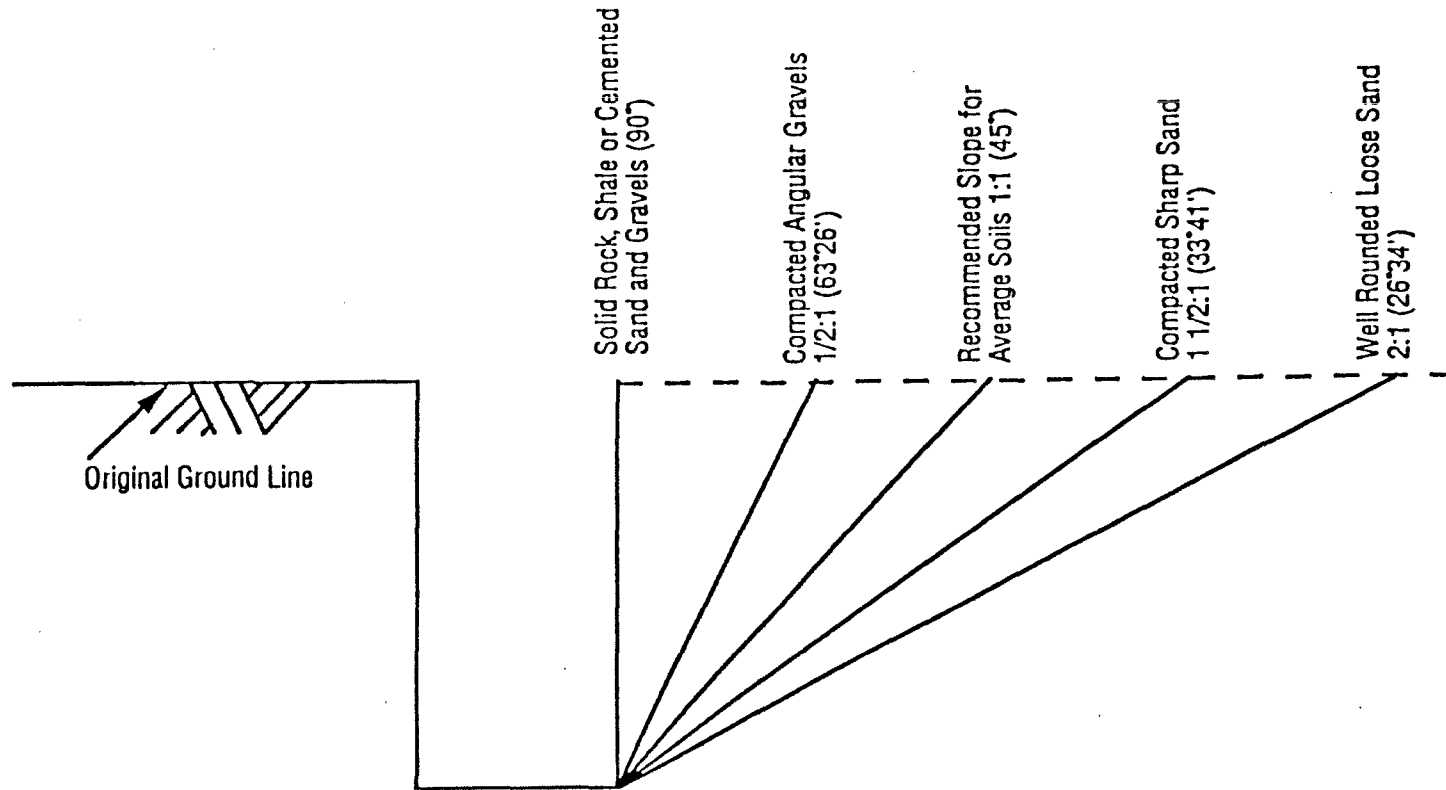


Figure E-2
Minimum Trenching Requirements

Depth of trench	Kind or condition of earth	Size and spacing of members										
		Uprights		Stringers		Cross braces				Maximum spacing		
		Minimum dimension	Maximum spacing	Minimum dimension	Maximum spacing	Up to 3 feet	3 to 6 feet	6 to 9 feet	9 to 12 feet	12 to 15 feet	Vertical	Horizontal
Feet		Inches	Feet	Inches	Feet	Inches	Inches	Inches	Inches	Inches	Feet	Feet
5 to 10	Hard, compact	3x4 or 2x6	6	.....	.....	2x6	4x4	4x6	6x6	6x8	4	6
	Likely to crack	3x4 or 2x6	3	4x6	4	2x6	4x4	4x6	6x6	6x8	4	6
	Soft, sandy or filled	3x4 or 2x6	Close sheeting	4x6	4	4x4	4x6	6x6	6x8	8x8	4	6
	Hydrostatic pressure	3x4 or 2x6	Close sheeting	6x8	4	4x4	4x6	6x6	6x8	8x8	4	6
10 to 15	Hard	3x4 or 2x6	4	4x6	4	4x4	4x6	6x6	6x8	8x8	4	6
	Likely to crack	3x4 or 2x6	2	4x6	4	4x4	4x6	6x6	6x8	8x8	.....	6
	Soft, sandy or filled	3x4 or 2x6	Close sheeting	4x6	4	4x6	6x6	6x8	8x8	8x10	4	6
	Hydrostatic pressure	3x6	Close sheeting	8x10	4	4x6	6x6	6x8	8x8	8x10	4	6
15 to 20	All kinds of conditions	3x6	Close sheeting	4x12	4	4x12	6x8	8x8	8x10	10x10	4	6
Over 20	All kinds of conditions	3x6	Close sheeting	6x8	4	4x12	8x8	8x10	10x10	10x12	4	6

Trench jacks may be used in lieu of, or in combination with, cross braces.

Shoring is not required in solid rock, hard shale, or hard slag.

Where desirable, steel sheet piling and bracing of equal strength may be substituted for wood. Figure as reported in OSHA Safety and Health Standards (29 CFR 1926/1910) 1926.652.

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ATTACHMENT F
CONFINED SPACE ENTRY

F.1 General

Confined space is considered to be any area that is not sufficiently ventilated such that poisonous gases or flammable vapors can accumulate, or where an oxygen deficient atmosphere can develop and where there is a limited means to escape the area. Confined spaces include tanks, vaults, trenches and pits exceeding. A confined space is any space where the enclosed structure exceeds five feet in depth and is not equipped with an aggressive ventilation system. Confined space entry occurs when the head is placed within an area defined as a confined space. Given the potential for buildup of toxic or combustible vapors or fumes within these areas, and the requirement that personnel enter these areas, it is necessary to establish appropriate confined space entry procedures for these special operations.

F.2 Entry Procedure

The following procedures and practices have been developed for confined space entry.

F.2.1 Training

The site supervisor and all site personnel assigned to monitor and maintain the confined space operation (entry and standby personnel) must be trained in the confined space entry procedures outlined below. Additionally, such personnel must be trained in the use of personal protective equipment and emergency response procedures relative to the site Health and Safety plan.

F.2.2 Initial Approach and Monitoring Requirements

A confined space entry permit must be completed and signed by the project manager, site supervisor, site safety officer, corporate safety coordinator, personnel entering the area and standby personnel before any confined space entry. Prior to removing any covering (manhole covers) on a confined space, the site supervisor will monitor for explosive mixtures or conditions in the air around the entire access area using an MSHA approved explosimeter. An organic vapor analyzer (OVA) will be used around the perimeter of the opening before they are removed to detect any elevated concentrations of organic vapors. An oxygen level meter will be used to check the atmospheric oxygen content within the space. Monitoring for organic vapors and combustible gases will continue around the entire confined space entrance area throughout the operation.

If unsafe readings are observed outside the opening, the site supervisory personnel will be notified. The following conditions,

as monitored within the confined space, will be considered safe for entry:

- Combustible gas levels below 10%
- O₂ levels above 19.5% and below 25%
- Organic vapor concentrations at or below PEL/TLV where compound is known (SCBA are required where compound[s] are unknown).

F.2.3. Personal Protective Equipment and Emergency Equipment

The minimum level of personal protective equipment required to enter the confined space includes hard hat, work shoes, and safety glasses. Chemical resistant gloves (inner and outer), outer boots, chemical protective clothing and respirators may be required based on air monitoring results. A lifeline and harness assembly may also be required based on the initial air monitoring results. Self-contained breathing apparatus will be worn when the O₂ level is under 19.5% and when organic vapor concentrations exceed the capabilities of air purifying respirator cartridge. The following equipment will be readily available during any confined space entry and maintenance activities:

- Lifeline and harness
- Self-contained breathing apparatus
- Air purifying respirators and approved cartridges
- Tyvek, polytyvek and saranex suits
- Nitrile, Neoprene or other chemically resistant gloves
- ABC fire extinguishers
- First aid supplies
- Air horns or other alarm devices
- Two way radios
- Monitoring instruments (organic vapor analyzer, explosimeter and oxygen level meters)
- Portable ventilation equipment (optional)

F.3 Stand-By Personnel

A stand-by person equipped and dressed in LEVEL B PPE will be present at all times during any confined space entry. The stand-by person will keep a record of the time other workers enter and leave the confined space. He will also warn the workers when their SCBA air supplies need to be replenished (if applicable). The stand-by person must always be in continuous visual contact with the workers while they are in the confined space. Stand-by personnel will have a direct line of communication to the site supervisor for immediate notification of emergencies. THE STANDBY PERSON IS NOT TO LEAVE THE WORK AREA EXCEPT TO REPORT AN EMERGENCY IF NO ONE ELSE IS AVAILABLE. UNDER NO CIRCUMSTANCES SHOULD THE

STAND-BY PERSON ENTER THE CONFINED SPACE BEFORE HELP HAS ARRIVED.
If the worker(s) within the confined space become ill or injured,
the stand-by person will signal a designated alarm.